

REMARKS

1. The Amendments and the Support Therefor

No claims have been canceled, three new claims (18-20) have been added (wherein claim 20 is a new independent claim), and no claims 15-17 have been amended to leave claims 1-20 in the application. Since the application now contains 20 claims, 3 of which are independent claims, no fees are believed necessary. No new matter has been added by the amendments or new claims, wherein:

- Claims 15-17 are amended to correct their dependency.
- New claims 18 and 19, which are respectively dependent from claims 1 and 14, find support, for example, at page 13 line 25-page 15 line 16.
- New independent claim 20 finds support in claims 1 and 14, as well as in (for example) page 13 line 25-page 15 line 16.

Further comments regarding the new claims are set out at Section 5 below.

2. Section 1 of the Office Action: Objection to Claim 17

The objection to claim 17 is addressed by the corrective amendments to claims 15-17.

3. Sections 2-3 of the Office Action: Rejection of Claims 1-7, 9-15, and 17 under 35 USC §102 in view of *Hyun et al.*, "WorkPlan: Constraint-Based Database for Work Package Scheduling"

Prior to reviewing this rejection in detail, it is initially useful to review the background of the invention. In the construction industry, building projects are almost always schedule-driven: each contractor, when assigned a contract for a portion of a building project, agrees to perform a set project, often at a set price, according to a certain schedule. If the schedule is not met, the contractor will generally face some form of financial penalty, and therefore contractors have a significant incentive to meet the schedule. Further, it is well known that delays in one portion of a construction program can propagate to (i.e., delay) other phases of the construction project; for example, in a multistory building, significant delays in installing plumbing, electrical, etc. work

can occur if construction of the building's frame and floors are delayed. Thus, scheduling of construction work is of critical importance. The conventional method of construction schedule management is known as the Critical Path Method (CPM), wherein a schedule is constructed, potential critical events are identified (i.e., those "bottleneck" events which serve as predicates for later construction events), and building activities are monitored for compliance with the schedule. Greater resources can then be assigned to critical events if it appears they may deviate from the schedule, and the overall objective is to prevent such deviations from propagating to "dependent" construction events, throwing the entire project off-schedule. Prior patents cited in the present application discuss CPM at length; see, e.g., U.S. Patent 5,016,170 to *Pollalis et al.* (at column 1 line 23 onward) and U.S. Patent 4,019,027 to *Kelley* (see Abstract, and more generally the entire patent). As noted by these and other references of record, CPM is dedicated *solely* to schedule management and compliance: quality of construction is not considered. All that matters in CPM is that each construction phase be completed on time, so that any construction phases dependent thereon can be started and completed on time.

As noted throughout the Applicants' Background of the Invention section, the focus on scheduling has deficiencies: if the focus is simply on *installation* (or another construction task), rather than whether the installation (or other construction task) *works as intended*, the construction project may ultimately be dysfunctional, later costs will increase, and/or the project will diverge from the construction schedule rather than meeting it. To illustrate, consider the situation of construction of a hospital or laboratory where regulations and/or good operation require certain air flow patterns or pressure barriers to avoid spread of disease, or of noxious fumes. If a contractor needs to make a schedule to fulfill a contract, and simply meets minimum contract standards, the standards for proper installation may not be met. As a result, the construction will not meet its intended purpose; or may require significant later repair/reinstallation/tuning costs; or if detected by a licensing agency, may require that construction be halted and redone (in which case scheduling will be badly disrupted). Thus, the Applicants' method focuses on meeting quality standards for each task, rather than on task completion (though task completion monitoring is also useful so that CPM can be performed in conjunction with quality monitoring).

As the title of the *Hyun et al.* article implies, and as noted from the outset of the *Hyun et al.* article (review the first paragraph of the *Hyun* Introduction), the WorkPlan program described by *Hyun et al.* is simply a semiautomated CPM method: the entire article (and the WorkPlan program therein) are dedicated to *scheduling, with no actual consideration of quality*. The *Hyun et al.* article therefore differs from the claimed invention in several respects, including:

- *Hyun et al.* does not in fact describe any “quality control indicator form wherein quality standards for one of the tasks are listed” (as recited in clause b.1 of claims 1 and 14), nor is one suggested. Looking to *Hyun*’s page 157, Fig. 7 (which is cited as providing the limitations of claim 1, clause b), note that *Hyun*’s WorkPlan program lists tasks (e.g., “waterproofing”) and records their completion status (“Yes,” “No”) as well as any reason for a non-“Yes” completion status (as a “Reason for Variance”). However, no quality control standards are provided; for example, for “waterproofing,” the *Hyun* WorkPlan does not list the manufacturer’s recommended steps for application of the waterproofing material, set forth standards for waterproofing at joints/edges, or provide any other standard dictating when proper waterproofing has been executed. It is therefore submitted that the steps recited in clauses b of claims 1 and 14 are not met, nor are they in any way suggested. *Hyun*’s focus on completion status reflects the fact that the *Hyun* WorkPlan system is simply another CPM system, i.e., the entire focus is on whether tasks are timely completed, and if not, more resources are to be directed toward its completion so as to avoid propagation of delays to later stages of the construction process.
- *Hyun et al.* additionally does not verify whether quality standards are met, as recited in step c of claims 1 and 14. Rather, in *Hyun et al.*’s WorkPlan, the user simply states whether or not a task (e.g., “waterproofing”) is completed (i.e., completion status is noted), and if not, why. While page 157, column 2 is cited as disclosing verification of quality standards, this passage merely states that WorkPlan records the reason for delay/variance from schedule. But this is not the same as verifying quality control standards. Consider, for example, that if one indicates that the task of “waterproofing” was not timely completed owing to one of the reasons of “(1) contract; (2) engineering;

(3) material; (4) labor and equipment; (5) prerequisite work; (6) weather; and (7) accident", *one will know that the waterproofing task was completed late (and why) – but no indication is given as to whether the waterproofing was performed according to standards, or was otherwise properly performed.* In other words, the WorkPlan system states whether a task is completed (and whether and why any delay occurred), but ultimately *one can only assume* that the task was completed properly because no information is recorded on this topic. This again shows *Hyun et al.*'s focus on scheduling and CPM: the WorkPlan system is dedicated to task completion and allocation of resources to avoid delays, but quality is not a concern. This leads to the problem noted in the Applicants' Background of the Invention section, in that contractors/builders can simply do whatever is necessary to meet completion standards dictated by a contract – but the installation (or other task), while complete, may be defective.

- Regarding step d of claims 1 and 14, pages 157-158 of *Hyun et al.* note that the reasons for delay/variance from schedule may be reviewed (see particularly the passages bridging pages 157-158 and FIG. 10), but the WorkPlan system again gives no measure of adherence to quality standards; it only indicates why delays occurred. Again, an indication as to whether a task was completed with delay or without delay is not the same as an indication as to whether the task was completed properly: with WorkPlan, one may learn if "waterproofing" was done on time, or if it was delayed (and why), but ultimately one can only assume that it was done properly.

Most fundamentally, while *Hyun et al.* makes use of completion indicators (as is standard in CPM), it does not list or verify compliance with quality standards: ultimately, one knows that a task has been completed, and knows whether or not it has been delayed (and the reasons for such delay), *but no indication is given as to whether quality standards are met.* This is simply automation of standard CPM: completion status is monitored for tasks, and if delays are encountered, these are monitored so that more resources can be devoted to their elimination.

Regarding the dependent claims, if the rejection of claims 5-7 and 9 is continued, please clarify where *Hyun et al.* (particularly Fig. 8) describes or suggests machine-readable indicia, or the mechanical reading thereof. These rejections appear to be plainly erroneous, particularly insofar as the cards/container of claim 9 are not present in *Hyun et al.* Similarly, regarding claim 13, if the rejection is maintained, please indicate where tracking forms are attached to building components.

4. Sections 4-6 of the Office Action: Rejection of Claims 8 and 16 under 35 USC §103(a) in view of *Hyun et al.*, "WorkPlan: Constraint-Based Database for Work Package Scheduling" and *Finch et al.*, "Auto-ID Application in Construction"

Kindly reconsider these rejections, which appear to be made in hindsight. Regarding claim 8, note that *Finch* teaches/suggests the use of barcodes for *identification*; see the first paragraph of the introduction, and note that the cited passage (page 124, column 1, 3rd par.) indeed notes the use of barcoding drawings to identify them (e.g., is the drawing in question the correct drawing for the building area in question?). Claim 5, the parent claim for claim 8, notes that the barcode or other machine-readable indicia is associated with a completion indicator on the tracking form (i.e., the indicia indicates completion status rather than the identity of the tracking form itself (or some component or task associated therewith)). Stated more simply, *Finch* might fairly suggest placing a barcode on a component to be installed so that the component can be identified, but *Finch* does not anywhere suggest that a barcode should or could be usefully used to indicate that the component has indeed been installed. A proper obviousness rejection requires a "clear and particular" suggestion to modify or combine references (*In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)), and here we respectfully submit there is no such suggestion: if one steps back, places the claimed invention out of mind, and objectively and fairly considers what *Finch* might suggest as an improvement to *Hyun*, it is not seen how the claimed invention would result (particularly since *Hyun* teaches a computer program which does not seem compatible with an adhesive barcode). If it is nevertheless believed that *Finch* or another reference of record suggests use of a barcode as a completion indicator, kindly identify with particularity the location and

content of the alleged disclosure or suggestion so that the Applicant may better respond.¹ Similarly, with regard to claim 16, even if it assumed that *Hyun et al.* teaches a tracking form as recited, *Finch* suggests that one should place a barcode on the form to identify the form document itself, *not* to indicate that one should place a barcode on the form to indicate that some task has been completed.

5. New Claims

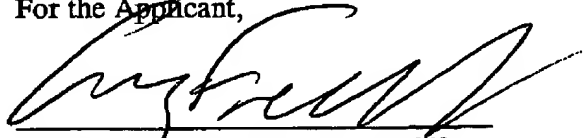
Claims 18-20 further are further differentiated from *Hyun et al.* in that completion status for a task is recorded *after* verifying whether the quality standards for the task are met. In comparison, *Hyun et al.* requires that completion status be recorded before stating the reasons for any variance (i.e., before completing the "Reasons for Incompletion" screen of Fig. 9), or before taking any other steps that might be regarded as involving verification of quality standards. Further, note that there is nothing which suggests that it would be beneficial to modify *Hyun et al.* so that the "Reasons for Incompletion" screen of Fig. 9 would be completed before recording completion status (i.e., before selecting "Yes" or "No" below "Plan Percent Complete" in the Fig. 7 screen); this would be impractical and inefficient, since there are no "Reasons for Incompletion" if the contractor can enter "Yes" to indicate timely completion. Again, note that *Hyun et al.*'s WorkPlan addresses completion status before all else, since its focus is on CPM (scheduling), and no regard is given to quality control.

¹ "[W]hen the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference," *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (citing to *In re Yates*, 211 USPQ 1149, 1151 (CCPA 1981)); "When relying on numerous references or a modification of prior art, it is incumbent upon the examiner to identify some suggestion to combine references or make the modification," *In re Mayne*, 41 USPQ2d 1451, 1454 (Fed. Cir. 1997); see also *In re Rouffet*, 47 USPQ2d 1453 (Fed. Cir. 1998) (reversal of rejections for failure of Examiner and Board to "explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination", *Id.* at 1458; "even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. . . . In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious", *Id.* at 1459). See also 37 CFR §1.104(c)(2).

6. In Closing

If any questions regarding the application arise, please contact the undersigned attorney. Telephone calls related to this application are welcomed and encouraged. The Commissioner is authorized to charge any fees or credit any overpayments relating to this application to deposit account number 18-2055.

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